

**P22-06****Effect of oral and intraperitoneal Mg treatment on Cd kidney content in intoxicated rats**

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The study was carried out to investigate the effects of magnesium (Mg) oral and intraperitoneal pretreatment on cadmium (Cd) levels in kidney in conditions of acute Cd poisoning.

Wistar rats were randomly divided into the following groups: control-non-treated animals, Cd-or-received orally 30 mg Cd/kg b.w., Cd + Mg-or-received orally 50 mg Mg/kg b.w. 1 hour before Cd, Cd-ip-received intraperitoneally 1.5 mg Cd/kg b.w. and Cd + Mg-ip-received intraperitoneally 3 mg Mg/kg b.w. 10 min before Cd treatment. Animals were sacrificed 24 h after treatment and their kidneys were mineralized with conc. HNO<sub>3</sub> and conc. HClO<sub>4</sub> in ratio 4:1. Cadmium concentrations were measured by Graphite-Furnace atomic absorption spectrophotometry (SpectraAA 220, GTA 110, Varian, Australia).

The levels of Cd in kidney were significantly increased in all treated groups when compared to control ( $P < 0.001$ ). However, magnesium co-treatment significantly reduced Cd kidney levels when compared to corresponding groups treated only with Cd ( $P < 0.05$ ). The decreased Cd renal overload in response to Mg oral pretreatment may be contributed to their interactions on the level Cd gastrointestinal absorption, while beneficial effect of Mg intraperitoneal pretreatment suggests possible interactions on the level of kidneys as well, with Mg preventing Cd uptake in renal cells. It can be postulated that Mg, with its positive effect on Cd body burden in renal tissue, can have protective effect against Cd nephrotoxicity. Hence, Mg may represent a potential option in prevention of Cd-induced renal injuries, although further studies are needed.

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**P22-07****Mechanisms of Cu,Zn-SOD inhibition in tissues of mice exposed to acute Cd intoxication**

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Available data indicate that cadmium (Cd) exposure causes oxidative damage by reducing the activities of antioxidant enzymes, Cu,Zn-superoxide dismutase (Cu,Zn-SOD) being one of them. However, the mechanism of cadmium effect on the activity of Cu,Zn-SOD is still unclear. The aim of this study was to investigate the effect of acute cadmium intoxication on Cu,Zn-SOD activity and copper (Cu) and zinc (Zn) content in the liver and kidney of mice.

The experiment was performed on Swiss mice given single oral dose of 20 mg Cd/kg b.w. as an aqueous solution of CdCl<sub>2</sub> and controls. Bioelements concentration and Cu,Zn-SOD activity were determined after 4, 6, 12, 24 and 48 h.

The obtained results showed that acute Cd intoxication induced a significant decrease of hepatic and renal Cu,Zn-SOD activity after 6 h which lasted until the end of experiment if compared with the controls. Decrease in the activity of Cu,Zn-SOD in mice kidney was accompanied by reduced Cu and Zn content in mice kidney, while no significant alteration in Zn levels was observed in liver. Although

the findings observed in kidney indicate the replacement of Cu and Zn by Cd, the results obtained for liver suggest possible direct Cd-enzyme interactions. These results contribute to the investigation on the mechanisms of Cd toxicity.

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**P22-08****Amelioration of lead toxicity from rat liver with artichoke leaf extract**

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**Purpose:** Lead and its compounds are known to be one of the major environmental pollutants for human health. This study was undertaken to evaluate the protective effects of artichoke extract compared to vitamin C against lead toxicity in rats. **Methods:** Rats were divided into four groups. Group I (control) which received standard diet. Group II was lead-intoxicated group without treatment. Group III, lead-intoxicated group supplemented with artichoke extract (300 mg/kg b.w.). Group IV, lead-intoxicated group supplemented with vitamin C (1 mg vitamin C/100 g b.w.). Serum lead, cholesterol, triglycerides, LDLc, HDLc, ALT (alanine transaminase), AST (aspartate transaminase), and ALP (alkaline phosphatase) levels were determined. Also, several sections of the liver were stained. **Results and conclusion:** In group II serum lead, TG, VLDL, ALT, AST, and ALP levels increased compared to group I (control). However, in groups III and IV administration of the artichoke leaf extract and vitamin C attenuated the elevated serum parameters (especially ALT, AST, and ALP) toward normal range compared to group II. Also, rats treated with artichoke (group II) showed a mild degree of lymphocyte infiltration which was relatively comparable to the control group and rats treated with vitamin C (group IV). The efficiency of artichoke was possibly due to its antioxidant and flavonoids such as cynarin, chlorogenic acid, and caffeoylquinic acid. These results clearly showed that the artichoke extract in lead-poisoned rats had equivalent chelating properties compared to those of vitamin C.

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**P22-09****Effect of prolonged Zn + Cu + Mg treatment on Cd level in kidney of Cd-intoxicated rabbits**

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Although cadmium is important occupational and environmental pollutant, therapy and prophylaxis of this toxic metal is not solved yet. Literature data indicate antagonism between Cd and certain bioelements and emphasize their role against Cd toxicity. The goal of this study was to investigate the influence of Zn, Cu and Mg simultaneous supplementation on Cd content in rabbit kidney as a target organ of prolonged Cd toxicity.

Investigation was performed on rabbits *Oryctolagus cuniculus*-Belgian hare divided into: control group, Cd group-animals intoxicated orally with 10 mg Cd/kg b.w. every day for 4 weeks and Cd + Zn + Cu + Mg group-animals supplemented with 10 mg